CLAIMS:

1. A capacitor comprising first and second conductive electrodes having a high k capacitor dielectric region positioned therebetween, the high k capacitor dielectric region comprising a layer of metal oxide having multiple different metals bonded with oxygen, the layer having varying stoichiometry across its thickness, the layer comprising an inner region, a middle region, and an outer region, the middle region having a different stoichiometry than ~~both~~ the inner and outer regions.

2. The capacitor of claim 1 wherein the inner and outer regions have essentially the same stoichiometry.

3. The capacitor of claim 1 wherein the metal oxide with multiple different metals bonded with oxygen comprises a ferroelectric material.

4. The capacitor of claim 1 the capacitor dielectric region consists essentially of the layer.

5. A capacitor comprising first and second conductive electrodes having a high k capacitor dielectric region positioned therebetween, the high k capacitor dielectric region comprising a layer of metal oxide having multiple different metals bonded with oxygen, one of the metals when bonded with oxygen having a first current leakage potential, another of the metals when bonded with oxygen having a second current leakage potential which is greater than the first current leakage potential, the layer comprising at least one portion having a greater concentration of the one metal bonded with oxygen which is more proximate at least one of the first and second electrodes than another portion more proximate a center of the layer.

6. The capacitor of claim 5 wherein the another portion has a greater concentration of the another of the metals bonded with oxygen than the one portion.

7. The capacitor of claim 5 wherein the layer comprises portions having a greater concentration of the one metal bonded with oxygen more proximate both the first and second electrodes than the another portion more proximate the center of the layer.

8. The capacitor of claim 5 wherein the at least one portion contacts the one electrode.

9. The capacitor of claim 5 wherein the layer comprises portions having a greater concentration of the one metal bonded with oxygen more proximate both the first and second electrodes than the another portion more proximate the center of the layer, said greater concentration portions respectively contacting the first and second electrodes.

10. The capacitor of claim 5 wherein the metal oxide with multiple different metals bonded with oxygen comprises a titanate, and the one metal comprises titanium.

11. The capacitor of claim 5 the capacitor dielectric region consists essentially of the layer.

12. A capacitor comprising first and second conductive electrodes having a high k capacitor dielectric region positioned therebetween, the high k capacitor dielectric region comprising a layer of metal oxide having multiple different metals bonded with oxygen, one of the metals when bonded with oxygen producing a first material having a first current leakage potential, absence of the one metal in the oxide creating a vacancy and a second material having a second current leakage potential which is greater than the first current leakage potential, the layer comprising at least one portion having a greater concentration of the first material which is more proximate at least one of the first and second electrodes than another portion more proximate a center of the layer.

13. The capacitor of claim 12 wherein the layer comprises portions having a greater concentration of the first material more proximate both the first and second electrodes than the another portion more proximate a center of the layer.

14. The capacitor of claim 12 wherein the at least one portion contacts the one electrode.

15. The capacitor of claim 12 wherein the layer comprises portions having a greater concentration of the first material more proximate both the first and second electrodes than the another portion more proximate a center of the layer, said greater concentration portions respectively contacting the first and second electrodes.

16. The capacitor of claim 12 wherein the metal oxide with multiple different metals bonded with oxygen comprises a titanate, and the one metal comprises titanium.

17. The capacitor of claim 12 the capacitor dielectric region consists essentially of the layer.

18. A capacitor comprising first and second conductive electrodes having a high k capacitor dielectric region positioned therebetween, the high k capacitor dielectric region comprising a layer of metal oxide having multiple different metals bonded with oxygen, one of the metals when bonded with oxygen having a first dielectric constant, another of the metals when bonded with oxygen having a second dielectric constant which is less than the first dielectric constant, the layer comprising at least one portion having a greater concentration of the one metal bonded with oxygen more proximate a center of the layer than another portion more proximate either of the first and second electrodes.

19. The capacitor of claim 18 wherein the another portion contacts one of the first and second electrodes.

20. The capacitor of claim 18 wherein the another portion has a greater concentration of the another of the metals bonded with oxygen than the one portion.

21. The capacitor of claim 18 wherein the layer comprises portions having a greater concentration of the another metal bonded with oxygen more proximate both the first and second electrodes than the one portion more proximate the center of the layer, said greater concentration portions respectively contacting the first and second electrodes.

22. The capacitor of claim 18 the capacitor dielectric region consists essentially of the layer.

23. The capacitor of claim 18 wherein the metal oxide with multiple different metals bonded with oxygen comprises a titanate, and the another metal comprises titanium.

24. The capacitor of claim 18 wherein the metal oxide with multiple different metals bonded with oxygen comprises barium strontium titanate, and the one metal comprises at least one of barium and strontium.

25. A capacitor comprising first and second conductive electrodes having a high k capacitor dielectric region positioned therebetween, the high k capacitor dielectric region comprising a layer of metal oxide having multiple different metals bonded with oxygen, one of the metals when bonded with oxygen producing a first material having a first dielectric constant, absence of the one metal in the oxide creating a vacancy and a second material having a second dielectric constant which is less than the first dielectric constant, the layer comprising at least one portion having a greater concentration of the first material which is more proximate a center of the layer than another portion more proximate either of the first and second electrodes.

26. The capacitor of claim 25 wherein the layer comprises portions having a greater concentration of the first material more proximate both the first and second electrodes than the another portion more proximate a center of the layer.

27. The capacitor of claim 25 wherein the another portion contacts the one electrode.

28. The capacitor of claim 25 wherein the layer comprises portions having a greater concentration of the another material more proximate both the first and second electrodes than the one portion more proximate a center of the layer, said greater concentration portions respectively contacting the first and second electrodes.

29. The capacitor of claim 25 the capacitor dielectric region consists essentially of the layer.

30. The capacitor of claim 25 wherein the metal oxide with multiple different metals bonded with oxygen comprises a titanate.

31. The capacitor of claim 25 wherein the metal oxide with multiple different metals bonded with oxygen comprises barium strontium titanate, and the one metal comprises at least one of barium and strontium.

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